

LITERATURE CITED

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APPENDIX A: POPULATION ESTIMATION TECHNIQUES USED TO DETERMINE WOLF POPULATION NUMBERS IN IDAHO

Since wolves were first reintroduced into Idaho, annual winter wolf population estimates have been calculated using the same technique. Following this technique, for any given year, the wolf population is estimated by starting with the previous end-of-year estimate, adding all documented reproduction and immigration, and subtracting all documented mortality and emigration for the current year. Mathematically this technique is represented as:

$$\text{Minimum Wolf Population Estimate} = \text{Last year's population estimate} + \text{documented pups produced} + \text{immigrants} - \text{documented mortalities} - \text{emigrants}$$

Using this technique, the 2006 wolf population estimate is 633 wolves:

$$(518) + (185) + (1) - (68) - (3) = 633 \text{ wolves}^*$$

This technique worked well for the first several years after wolves were reintroduced when the population was relatively small and most wolves were radiocollared. As most, if not all, packs could be actively monitored using radiotelemetry, reproduction, mortality, and dispersal could be accurately assessed. For small recovering populations monitored using radiotelemetry, this technique is essentially a total count method.

Using the same population estimation technique from year to year is important to assess population trends across years. Idaho wolf population estimates have increased every year since wolves were first reintroduced in 1995. The 2006 estimate indicated a 22.2% population increase from the previous year ($\lambda = 1.22$).

As the Idaho wolf population expanded, our confidence in this technique has waned because it became increasingly difficult to document all packs; a smaller proportion of the wolf population was radiocollared increasing the difficulty for monitoring status of known packs; and reproduction, mortality, and dispersal became more difficult to assess. Static funding and personnel levels in the face of an expanding wolf population and workload added to the challenge of collecting sufficient data required by this technique to accurately estimate the growing number of wolves.

We have, for the past few years, explored additional methods of estimating the wolf population that are more appropriate given a much larger, fully recovered population and applicable for the types of data we are able to collect. Our efforts have recently focused on one of the most promising methods, which we provided to a peer review group of wolf biologists and statisticians in spring 2006. This technique bypasses the need to count pups in every pack, and instead relies on our documented packs, estimated pack size, number of wolves documented in small groups not considered packs, and a percentage of the population believed to be lone wolves. Mathematically this technique is represented as:

$$\text{Minimum Wolf Population Estimate} = ((\text{Documented packs} * \text{mean pack size}) + (\text{Wolves in other documented wolf groups})) * (\text{lone wolf factor})$$

Using this technique, the 2006 wolf population estimate is 673 wolves:

$$\begin{aligned} & ((72 * 8.2) + (8)) * 1.125 \\ & (590 + 8) * 1.125 \\ & 602 * 1.125 = \\ & 673 \end{aligned}$$

The number of documented packs that were extant at the end of 2006 was 72.

Mean pack size (8.2) was calculated using only those packs ($n = 29$) for which biologists believed complete pack counts were obtained in 2006. Even so, these counts should be considered minimums.

To account for wolves not classified as lone wolves and not associated with documented packs, we included a “total count” for those radiocollared wolves in groups of 2-4 wolves that were not considered packs under Idaho’s definition. This resulted in the addition of 8 wolves from 3 groups.

A lone wolf factor (12.5%) was added to account for that component of the wolf population comprised of wolves not associated with packs or groups of 2-4 wolves. This was a mid value derived from 5 peer-reviewed, published studies and 4 non-reviewed papers from studies that occurred in North America and were summarized and reported in 2003 (Mech and Boitani 2003, page 170). For 2006, an estimated 75 lone wolves were in the Idaho population.

* An error was found and corrected in the 2005 minimum population estimate (Nadeau et al. 2005), 6 additional wolves were added for a total of 518.

APPENDIX B: CONTACTS FOR IDAHO WOLF MANAGEMENT

Idaho Fish and Game Regional Offices at:

Headquarters Wildlife Bureau	(208) 334-2920
Panhandle Region	(208) 769-1414
Clearwater Region	(208) 799-5010
Southwest Region	(208) 465-8465
McCall Subregion	(208) 634-8137
Magic Valley Region	(208) 324-4350
Southeast Region	(208) 232-4703
Upper Snake Region	(208) 525-7290
Salmon Region	(208) 756-2271

For information about wolves in Idaho and IDFG management:

<http://fishandgame.idaho.gov/cms/wildlife/wolves/>

To contact IDFG via email:

<http://fishandgame.idaho.gov/inc/contact.cfm>

The Nez Perce Tribe's Idaho Wolf Recovery Program:

Telephone: (208) 634-1061
Fax: (208) 634-3231
Mail: P.O. Box 1922
McCall, ID 83638-1922
Email: cmack@nezperce.org
jholyan@nezperce.org

For information about the Nez Perce Tribe's Wildlife Program and to view Recovery Program Progress Reports, please visit the following website:

http://www.nezperce.org/programs/wildlife_program.htm

U.S. Fish and Wildlife Service Northern Rocky Mountain Wolf Recovery:

For information about wolf recovery in the Northern Rocky Mountains, please visit the USFWS website at the following:

<http://www.westerngraywolf.fws.gov/>

To report wolf sightings within Idaho:

Report online: <http://fishandgame.idaho.gov/wildlife/wolves/report.cfm>

To report livestock depredations within Idaho:

USDA/APHIS/Wildlife Services

State Office, Boise, ID (208) 378-5077

District Supervisor, Boise, ID (208) 378-5077

District Supervisor, Gooding, ID (208) 934-4554

District Supervisor, Pocatello, ID (208) 236-6921

Wolf Specialist, Arco, ID (208) 681-3127

To report information regarding the illegal killing of a wolf or a dead wolf within Idaho:

U.S. Fish and Wildlife Service Senior Agent, Boise, ID (208) 378-5333

Citizens Against Poaching (24hr) 1-800-632-5999
or any IDFG Office